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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,831	01/29/2004	Tatsuo Tabaru	Q78763	2354

23373 7590 08/15/2005  
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EXAMINER

BAREFORD, KATHERINE A

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 08/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/765,831

Applicant(s)

TABARU ET AL

Examiner

Katherine A. Bareford

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 15-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8 and 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

*Claims 5-7 And 10-14 are canceled*

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. The amendment of July 5, 2005 has been received and entered.

#### *Election/Restrictions*

2. Newly submitted claims 15-20 are directed to inventions that are independent or distinct from the invention originally claimed for the following reasons:

Initially provided claims 1-4 and 8-9 provide Group I, claims directed to a method of forming a film. New claims 15-17 form Group II, claims directed to a coating material. New claims 18-20 form Group III, claims directed to a film on a surface of a substrate, forming a coated article.

As to the independence or distinction of new Groups II and III from original Group I:

(a) Inventions II and I are related as product (the coating material) and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the coating material of Group II can be used in a materially different process than that of Group I, such as forming cast articles.

(b) Inventions I and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the

process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process, such as oxidizing the substrate after the coating is applied.

(c) Inventions II and III are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product (MPEP § 806.04(b), 3rd paragraph), and the species are patentably distinct (MPEP § 806.04(h)). In the instant case, the intermediate product is deemed to be useful as a casting material and the inventions are deemed patentably distinct since there is nothing on this record to show them to be obvious variants. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions anticipated by the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 15-20 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

*Claim Rejections - 35 USC § 112*

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-4 and 8-9 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for performing the coating step and at the same time forming the intermediate layer using the element “capable of forming an oxide”, does not reasonably provide enablement for simply providing an intermediate layer comprising “the oxide having a low enthalpy. . .” as provided by claim 1. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

In the specification, it is provided that the intermediate layer comprising the “oxide having a low enthalpy. . .” is formed between the substrate and the coating material by the process of the coating step. See paragraph [0022] and [0040]. As worded the intermediate layer could be applied separately.

The other dependent claims do not cure the defects of the claims from which they depend.

5. The rejection of claims 1-14 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is withdrawn due to applicant's amendments to the claims of July 5, 2005.

*Claim Rejections - 35 USC § 102*

6. The rejection of claims 1, 2, 4-6 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Good et al (US 3928906) is withdrawn due to applicant's amendments to the claims of July 5, 2005.

*Claim Rejections - 35 USC § 103*

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not

commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tzatzov et al (US 2002/0192494) in view of Good et al (US 3928906).

Tzatzov teaches a method of coating surfaces such as stainless steels. Paragraph [0018]. The surfaces are coated with a coating material that can be a Ni-Al alloy. See paragraphs [0023] and [0028] (M can be nickel). The alloy can also contain molybdenum. See paragraph [0028] (T can be molybdenum). The alloy also contains silicon. See paragraphs [0023] and [0028]. The components can be in various amounts. See paragraph [0029]. Two or more powders of the constituents of the alloy can be blended with an effective amount of binder to adherently coat the substrate. Paragraph [0031]. The coating method can be thermal spraying, plasma transferred arc, or isostatic pressing. See claim 2. Reaction sintering with heating also takes place simultaneously or after coating. See paragraphs [0031] – [0032].

Tzatzov teaches all the features of these claims except the preliminary oxidation step and intermediate layer formation (claim 1), (2) the hot isostatic press sintering (claims 3,4) and (3) the specific material compounds (claim 1).

However, Good teaches a method for forming a film on the surface of a substrate. Column 5, line 65 through column 6, line 55. The film has an intermediate layer at an interface with the substrate. Column 6, lines 10-25. The method includes a

preliminary oxidation step of forming an oxide layer on the substrate by oxidation thereof. Column 6, lines 1-25. The substrate can be a stainless steel material. Column 6, lines 1-3. A coating step is provided of coating the oxidized surface with a coating material that can be NiAl. Column 6, lines 35-45. The coating material contains an element (Al) forming an oxide having a low enthalpy of formation as compared to the oxide of the stainless steel substrate. Column 6, lines 35-45. The coating step can further comprise a heating step. Column 6, lines 25-45 (the preheating and the plasma spraying). The film can be formed by plasma spraying. Column 6, lines 35-45. The coating material can be NiAl. Column 6, lines 35-45. An intermediate layer between the substrate and applied coating material comprising the oxide having a low enthalpy of formation (aluminum oxide) compared to that of the oxide of the steel substrate would be formed by this process, since Good applies the material in a thermal spraying (plasma spraying) method as required by the present claims for this process (see claim 4) and further Good teaches that the application of the coating causes an exothermic reaction with the oxidized surface to provide a good surface bond - thus indicating the formation of the aluminum oxide. See column 6, lines 40-50.

It would have been obvious to one of ordinary skill in the art the time the invention was made to modify Tzatzov to provide a preliminary oxidation step before coating as suggested by Good with an expectation of providing a desirably bonded coating with an oxide intermediate layer as claimed, because Tzatzov teaches providing a nickel aluminum based coating on a stainless steel surface by thermal spraying, and

Good teaches that when providing a nickel aluminum based coating on a stainless steel surface by thermal spraying, it is desirable to oxidize the surface prior to coating to provide a better bond due to the reaction between the coating and oxidized surface. It would further have been obvious to provide hot isostatic press sintering as the application method, because Tzatzov teaches to provide coating with isostatic pressing and that simultaneously with the coating reactive sintering with heating can be provided, thus suggesting the use of hot isostatic press sintering, which provides both teachings. As to the specific compounds used, Tzatzov teaches to use all of the materials listed in the claims, and that these materials can vary in the amounts used, thus suggesting to perform routine experimentation to optimize the amount of materials to be used for the specific application desired.

*Allowable Subject Matter*

10. Claims 8 and 9 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The cited prior art does not teach or suggest the use of the components as claimed.

*Response to Arguments*

11. Applicant's arguments filed July 5, 2005 have been fully considered but they are not persuasive.

As to the 35 USC 103 rejection of claims 1-4 using Tzatzov in view of Good, applicant argues that even if the T in the alloy of Tzatzov is Mo, the alloy would have at most 10 wt% of Mo, while in the present invention, the Mo alloy contains 60 wt% or more of Mo, and thus the alloy of Tzatzov does not satisfy the requirements of the alloy recited in the present claims. Furthermore, applicant argues that the alloy of Tzatzov contains M or Cr as the main components while the Mo alloy of the present invention does not contain M or Cr. Furthermore, according to applicant, Good does not rectify the deficiencies of Tzatzov et al as to these features.

The Examiner has reviewed these arguments, however, the rejection is maintained. As to the amount of Mo in the coating material alloy, there is no requirement in the claims that the alloy contain over 60 wt% of Mo, only that the coating material contains more than 50 volume percent of the entire Mo alloy material, including the Si and Al elements. As the coating material, Tzatzov can contain 10 wt % Mo, up to 40 wt% Si and up to 30 wt% Al. See paragraph [0029]. As a result, the total amounts of these three materials would apparently be capable of providing more than 50 volume percent of the material applied. As to the use of materials M and Cr in the coating of Tzatzov, the Examiner notes that Tzatzov can actually contain 0 wt% Cr (see paragraph [0029]). As to M and any Cr present, the coating materials can have other material present as long as the Mo alloy is more than 50 volume percent. Tzatzov also

teaches that the materials are provided by blending together two or more powders of the constituents (paragraph [0031]). As a result, it would be within the teaching of Tzatzov to blend a Mo, Al and Si containing alloy with the M and Cr constituents.

### *Conclusion*

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
**KATHERINE BAREFORD**  
**PRIMARY EXAMINER**